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# THE BRYOLOGIST

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## HOW TO KNOW THE MOSSES WITHOUT THE AID OF A LENS<sup>1</sup>

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### A. KEY TO SEPARATE THE MOSSES FROM HEPATICS AND LICHENS without the aid of a lens.

Since hepatics and lichens are sometimes collected for mosses, the following key will be helpful when there is doubt as to what are mosses.

*Plants growing flat, without stem or leaves.*

Usually dark green. . . . . **Thallose Hepatics**—*Marchantiales*.

The plant-body of some *Marchantiales* is like a broad flat leaf, sometimes elongated, often with a midrib, and branched by forking. A very young plant may resemble two or three leaves, but no distinct stem will be found and the apparent leaves will not be arranged in two opposite rows, or around a stem, as in the leafy hepatics, or the mosses.

Usually some shade of gray, or if green when moist, becoming gray when dry; sometimes brown or orange. . . . . **Lichens**—(see below)

*Plants, erect, ascending, prostrate, or hanging from trees; with a true stem, or, in lichens, apparently having a stem.*

Stems without leaves; usually some shade of gray, or, if green when moist, becoming gray when dry. . . . . **Lichens**.

The short branches of certain lichens may be mistaken for leaves. The leaves of hepatics and mosses are flat and thin, while the branches of lichens are round. When in doubt as to what are leaves, the color of the plants is usually a safe guide: lichens when dry are more gray than green, and are very stiff and brittle; hepatics and mosses are more a foliage green, and do not dry gray, or become so stiff and brittle.

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<sup>1</sup> NOTE.—This article is extracted with slight changes from a book by Mrs. Dunham with the above title, soon to be issued by the Houghton Mifflin Company. It will be an illustrated guide to the mosses of the northeastern United States, with keys to genera and species, but placing special emphasis upon those characters that are apparent without the use of a hand lens. Our sincere thanks are extended to Mrs. Dunham and to the Houghton Mifflin Company, for the courteous permission to publish this extract.—THE EDITORS.

Stems with leaves; always some shade of green, never gray.

Leaves usually arranged in two opposite rows; rounded, lobed or cleft, often curved under at the tips, usually dark green, midrib absent; under or back side of the stem, towards which the leaves curl, sometimes bearing what appear to be rootlets....

**Leafy Hepatics** — *Jungermanniales* (Scale Mosses).

Leaves usually arranged equally around the stem (in *Fissidens* in only two rows); sometimes flattened on two opposite sides of the stem, never lobed or cleft, and when rounded not curved under at the tips, varying from light to dark green, midrib present or absent..... **True Mosses.**

Plants usually growing in bogs or very wet places; stems erect, much branched, branches at tip of stems forming a thick head; leaves usually light green, or tinged with red....

**Sphagnum**, or Peat Moss.

Plants growing on rocks in mountainous regions; stems erect, short and inconspicuous; leaves very dark, almost black.

**Andreaea.**

Plants growing in all sorts of places; on wet or dry ground, rocks, trees, decaying wood, and in streams or ponds.

Stems usually erect and not branched; if slightly branched by forking, usually with not more than two or three branches; fruit at the end of the stem or a well developed branch, sometimes *appearing* lateral by new growth of the plant..... **Acrocarpous Mosses.**

Stems prostrate or ascending, rarely erect, usually much branched (i. e., with more than two or three branches); fruit on the side of the stem or on a very short lateral branch..... **Pleurocarpous Mosses.**

## B. HELPS TO IDENTIFY THE GENERA

of the more common and conspicuous mosses, without a lens.

### I. ACROCARPOUS MOSSES

**Manner of growth.**—*Individual plants* of the acrocarpous mosses can nearly always be *easily separated*, as the stems are *erect and do not interweave*. In some cases the stems are matted together below with a felt-like mass of radicles called tomentum. The *stems* of most acrocarpous mosses are *usually unbranched*, but sometimes they fork with only two or three branches.

*Stems ascending to erect, usually much branched by forking*; plants growing on rock, leaves olive to dark green, except at the growing tip of the stem, which is lighter..... *Grimmia*, *Racomitrium*.

*Stems erect, not branched or with branches whorled at tip of stem*; plants growing on wet ground or on rocks, especially where water is dripping; leaves usually light or yellowish green..... *Philonotis*.

Looked at from above, *has the outline of a star with many rays*, or looked at from the side, *resembles tiny spruce or pine trees*. Stems erect, usually not branched; leaves bright green, glaucous green or dark green; plants growing on the soil, on earth-covered rocks, old stumps and upturned roots . . . . . *Catharinaea*, *Polytrichum*.

Plants growing from protonema, a green or brownish coating on the surface of the soil . . . . . *Buxbaumia*, *Pogonatum*.

**Color of stem.**—Stems of most mosses are concealed by leaves, or are brown and inconspicuous.

Stems *showing red* through the leaves especially in the new growth when moist plants are held to the light . . . . . *Pohlia*, *Bryum*.

Stems at least in the lower part *covered with tomentum*, a felt-like mass of brown or whitish radicles . . . . . *Dicranum*, *Mnium*, *Aulacomnium*,  
*Bartramia*, *Philonotis*, *Polytrichum*.

### Shape of leaves—

Leaves *too small or too closely folded to be seen easily*.

Capsule almost concealed by leaves . . . . . *Grimmia*.

Capsule erect . . . . . *Ditrichum*, *Orthotrichum*, *Georgia*, *Pogonatum*.

Capsule not erect . . . . . *Funaria*, *Bryum*, *Philonotis*.

Leaves *conspicuously long and narrow*.

Capsule erect . . *Ditrichum*, *Dicranella*, *Dicranum*, *Ulota*, *Catharinaea*,  
*Pogonatum*, *Polytrichum*.

Capsule not erect . . *Dicranella*, *Dicranum*, *Leucobryum*, *Aulacomnium*,  
*Bartramia*, *Catharinaea*, *Polytrichum*.

Leaves *conspicuously short and broad*.

Capsule erect . . . . . *Fissidens*, *Rhacomitrium*, *Physcomitrium*,

Capsule not erect . . . . . *Fissidens*, *Rhodobryum*, *Mnium*.

**Position of leaves.**—Leaves of most mosses are arranged equally around the stem and branches and are *erect or spreading*.

Leaves more or less *turned to one side* (secund) . . . *Dicranella*, *Dicranum*.

Leaves *in two rows* on opposite sides of stem, giving the plants a flattened appearance . . . . . *Fissidens*.

Leaves *forming a rosette* at tip of stem . . *Leptobryum*, *Rhodobryum*, *Mnium*,  
*Catharinaea*, *Polytrichum*, (*Sphagnum*).

Leaves *undulate or wavy* . . . . . *Dicranum*, *Catharinaea*.

Leaves *conspicuously crisped when dry*.

Capsule erect . . . . . *Dicranum*, *Fissidens*, *Tortella*,  
*Barbula*, *Ulota*, *Catharinaea*.

Capsule not erect . . . . . *Dicranum*, *Fissidens*, *Rhodobryum*,  
*Mnium*, *Bartramia*, *Catharinaea*.

Leaves *conspicuously folded straight when dry*.

Capsule partly concealed by surrounding leaves . . . . .  
*Grimmia*, *Orthotrichum*.

Capsule erect . . . . . *Ditrichum*, *Rhacomitrium*, *Orthotrichum*, *Ulota*,  
*Georgia*.

Capsule not erect . . . . . *Ceratodon*, *Pohlia*, *Bryum*, *Pogonatum*,  
*Polytrichum*.

**Midrib** *seen* when moist plants are held to the light. . . . .  
*Rhodobryum, Mnium, Catharinaea.*

**Color of leaves.**—The color of the leaves of most mosses varies from light or yellowish green to dark green.

Leaves usually conspicuously *light or yellowish green*. . . . .  
*Physcomitrium, Funaria, Aulacomnium, Philonotis, (Sphagnum).*

Leaves *glaucous or whitish green*, especially when dry. . . . .  
*Leucobryum, (Sphagnum).*

Leaves *bluish green*. . . . . *Saelania, Polytrichum.*

Leaves usually conspicuously *dark or olive green*. . . . . *Grimmia, Rhacomitrium, Drummondia, Orthotrichum, Bryum, Webera, Georgia.*

Leaves sometimes with a *reddish tinge*. . . . . *Catharinaea, (Sphagnum).*

**Seta.**—The seta of most mosses is single, reddish brown, and conspicuous.

Seta *yellowish*. . . . . *Trematodon, Ditrichum, Dicranella.*  
*Physcomitrium, Dicranum, Funaria.*

Seta *dark red*. . . . . *Ceratodon, Pohlia.*

Setae *clustered*. . . . . *Dicranum, Rhodobryum, Mnium, Catharinaea.*

Seta *very short, apparently absent*, so that the capsule is partially concealed by the surrounding leaves. . . . . *Grimmia, Orthotrichum, Webera.*

#### **Position of Capsule—**

Capsule *erect*. . . . . *Ditrichum, Dicranella, Dicranum, Fissidens, Rhacomitrium, Orthotrichum, Ulota, Physcomitrium, Georgia, Catharinaea, Pogonatum, Polytrichum.*

Capsule *inclined*. . . . . *Trematodon, Ditrichum, Ceratodon, Dicranella, Dicranum, Leucobryum, Aulacomnium, Bartramia, Philonotis, Catharinaea, Polytrichum.*

Capsule *horizontal*. . . . . *Pohlia, Bryum, Rhodobryum, Mnium, Polytrichum.*

Capsule *hanging down*. . . . . *Funaria, Leptobryum, Pohlia, Bryum, Rhodobryum, Mnium, Polytrichum.*

Capsule *partly concealed* by surrounding leaves. . . . . *Grimmia, Orthotrichum.*

**Shape of operculum.**—The operculum of most mosses is convex, cone-shaped, or short beaked, and not especially conspicuous.

Operculum conspicuously *long beaked*. . . . . *Trematodon, Ditrichum, Dicranella, Dicranum, Leucobryum, Catharinaea, Polytrichum.*

**Calyptra.**—The calyptra of most mosses is smooth and inconspicuous, often falling off long before the capsule is mature.

Calyptra *hairy and conspicuous*. . . . . *Orthotrichum, Ulota, Pogonatum, Polytrichum.*

## II. PLEUROCARPOUS MOSSES.

**Manner of growth.** Pleurocarpous mosses usually *grow in rather flat mats* with the stems and branches prostrate or creeping, and often *closely interwoven* so that no great length of stem can easily be separated.

Plants with stems usually *ascending or erect* and *easily separated*. . . . .  
*Climacium, Helodium, Drepanocladus, Calliergon, Rhytidiadelphus, Hypnium, Ptilium, Stereodon.*

Plants *tree-like*, with erect stems, and erect or spreading branches only towards the tip of the stem. . . . . *Climacium*.  
Plants *fern-like* (branches bi- or tripinnate). . . . .

*Ptilium, Thuidium, Hylocomium*.

Plants *plume-like*. . . . . *Ptilium*.

**Color of stem.**—The stems of most pleurocarpous mosses are either covered with leaves and appear green, or are brown and inconspicuous.

Stems and branches *showing red* through leaves, when moist plants are held to the light. . . . . *Climacium, Hypnum, Hylocomium*.

**Position and shape of leaves.**—The leaves of most pleurocarpous mosses are erect or spreading, and are usually arranged equally around the stem and branches, sometimes apparently in two rows. They are generally more or less oval at the base, and end in a straight or curved tip, but are often too closely folded or too small to show the entire outline.

Leaves *straight and flattened on opposite sides of the stem*, apparently in two rows, giving the plants a pressed appearance. . . . *Neckera, Homalia, Isopterygium, Plagiothecium, Brachythecium, Rhynchostegium*.

Leaves *curved and turned in two opposite directions*, giving a braided appearance to the stems and branches. . . . . *Stereodon*.

Leaves *strongly curved*, and more or less *turned in one direction*. . . . .  
*Drepanocladus, Clenidium, Ptilium, Stereodon*.

**Color of leaves.**—The leaves of most mosses vary in color from a light or yellowish green to dark green.

Leaves usually *light, yellowish or golden green*.

Capsule erect. . . . . *Dichelyma, Neckera, Entodon, Pylaisia*.

Capsule not erect. . . . . *Helodium, Calliergon, Rhytidiadelphus, Hypnum, Ptilium, Cirriphyllum*.

Leaves usually very *dark or olive green*.

Capsule almost concealed by the surrounding leaves. . . . . *Hedwigia*.

Capsule erect. . . . . *Fontinalis, Anomodon, Leskea*.

Capsule not erect. . . . . *Oxyrhynchium*.

Leaves glaucous or *bluish green*. . . . . *Thelia*.

**Position of capsule.**—The capsules of genera not mentioned are more or less inclined.

Capsule erect. . . . *Fontinalis, Dichelyma, Climacium, Leucodon, Neckera, Homalia, Entodon, Platygyrium, Pylaisia, Thelia, Myurella*.

Capsule partially concealed by the leaves. . *Hedwigia, Fontinalis, Leucodon, Neckera*.

**Shape of operculum.**—The operculum of most mosses is convex, cone-shaped, or short-beaked, and not especially conspicuous.

Operculum conspicuously *long-beaked*. . . . . *Plagiothecium, Cirriphyllum, Oxyrhynchium, Eurhynchium, Rhynchostegium*.

WABAN, MASS.